

Amendment Under 37 CFR 1.111
09/898,001

AMENDMENTS TO THE SPECIFICATION

Please replace the present title with the following amended title:

METHOD OF AND DEVICE FOR EXCHANGING ELECTRONIC ~~DOCUMENTS~~
MESSAGES BY DIVIDING AND MERGING MESSAGES TO BE ~~RELAYED~~
TRANSMITTED AND COMPUTER PRODUCT.

AMENDMENTS TO THE SPECIFICATION

Please amend the following paragraphs as noted:

Page 1, paragraph 1,

The present invention relates to a technology of exchanging electronic ~~documents~~ messages, such as electronic mails, between a plurality of devices.

Page 1, paragraph 2,

~~An e~~Electronic document message exchanging devices are used to convert an electronic ~~document message~~ prepared in one format to another format when exchanging electronic ~~documents messages~~ between devices of different types. Examples of such electronic ~~document message~~ exchanging devices are the routers, switches, firewalls etc.

Page 1, paragraph 3,

The conventional electronic ~~document message~~ exchanging device is arranged to send the electronic ~~documents messages~~ only to the specific destination. Precisely, the transfer destination is fixed, and it can not be changed depending on the contents of ~~document the message~~. Moreover, these devices can not divide a ~~document message~~ or merge two or more ~~documents messages~~ depending on the length of the ~~document message~~ or stay time permitted for each destination. In addition, these devices can not judge whether it is possible or not to exchange or relay the electronic ~~document message~~. Also, these devices can not control the number of the ~~documents messages~~ to be exchanged or relayed when there are excess of message.

Page 2, paragraph 1,

It is an object of this invention to provide a technology in which it is possible to change the destination depending on the contents of ~~document a message~~, divide a ~~document message~~ or merge two or more ~~documents messages~~ depending on the length of the ~~document message~~ or stay time permitted for each destination, judge whether to exchange or relay the electronic ~~document message~~, and control the number of the ~~documents messages~~.

Page 2, paragraph 2,

According to one the method and device of one aspect of the present invention, electronic ~~document~~ message received from a source device is analyzed. From the result of this analysis it is decided whether to transmit the electronic ~~document~~ message to some other destination device or decide the destination of the electronic ~~document~~ message that is to be relayed. Electronic ~~documents~~ messages to be relayed are divided or merged in accordance with a predetermined length of the electronic ~~document~~ message and allowable stay times for respective destination device. The divided or merged electronic ~~documents~~ messages are transmitted to the destination device.

Page 3, paragraph 2,

Fig. 1 is a diagram showing an embodiment of the electronic ~~document~~ message exchanging device of the present invention;

Page 3, paragraph 7,

Fig. 1 is a diagram showing an embodiment of the electronic ~~document~~ message exchanging device of the present invention. This electronic ~~document~~ message exchanging device 1 is comprised of the message control section 2 which receives an electronic ~~document~~ message M and analyzes the contents of the electronic ~~document~~ message. Furthermore, the electronic switching device 1 includes the message separating section 3 which divides the electronic ~~document~~ message, message merging section 4 which merges two or more electronic ~~documents~~ messages, message cutoff section 5 which stops a flow of the electronic ~~documents~~ messages when the number of electronic ~~documents~~ messages per unit time exceeds an allowable value, and message transmitting section 6 which transmits the electronic ~~documents~~ messages.

Page 4, paragraph 1,

Each electronic ~~document~~ message is, for example, a message having a plurality of character strings, and contains a start code and an end code. The electronic ~~document~~ message is generated on a device that has not been shown in the figure.

Page 4, paragraph 2,

The electronic ~~document~~ message M from the start code to the end code is sequentially

received by a serial port of the electronic ~~document~~ message exchanging device 1. The following are examples of electronic ~~documents~~ messages.

Page 4, paragraph 6,

In these examples, each electronic ~~document~~ message starts with a character string which indicates date and ends with the line break code (0x0A). The line between the date and the line break code becomes one line.

Page 5, paragraph 1,

The message control section 2 analyzes the received electronic ~~document~~ message M, and determines whether to relay the ~~document~~ message or and decides where to relay the ~~document~~ message. These decisions are made in accordance with certain one or more predetermined conditions. For example, when the ~~document~~ message includes specific key word such as the following, then only the ~~document~~ message is relayed.

Page 5, paragraph 3,

If the message control section 2 decides that the ~~document~~ message is not to be relayed, that specific ~~document~~ message is deleted. On the other hand, if the message control section 2 decides that the ~~document~~ message is ~~not~~ to be relayed, then the ~~document~~ message is converted to a format that is acceptable by the destination device and a transmission output is generated. This transmission output is generated as a transmission waiting list for each transmission destination at a message output side interface.

Page 5, paragraph 4,

The message separating section 3 sequentially removes messages from the transmission waiting list and checks whether the length of the message exceeds the predetermined length. When the length exceeds the predetermined length, the message separating section 3 divides the transmission output into two or more electronic ~~documents~~ messages and sends these electronic ~~documents~~ messages to the message merging section 4. On the other hand, the message is sent as is to the message merging section 4 when the length is less than or equal to the predetermined length.

Page 6, paragraph 1,

The message merging section 4 waits for the next electronic ~~document~~ message intended for a transmission destination, until the allowable stay time of that transmission destination elapses. In the allowable stay time, the message merging section 4 merges a plurality of electronic ~~documents~~ messages into a single electronic ~~document~~ message which is the designated electronic ~~document~~ message length or less, and sends the electronic ~~document~~ message to the message cutoff section 5. If the allowable stay time has elapsed, the electronic ~~document~~ message is deleted.

Page 6, paragraph 2,

The message separating section 3 and message merging section 4 are the ones that divide or merge an electronic ~~document~~ message in accordance with the length of the ~~document~~ message and allowable stay time of the transmission destination.

Page 6, paragraph 3,

The message cutoff section 5 checks whether the generated frequency of the electronic ~~documents~~ messages (the number of electronic ~~documents~~ messages per unit time) generated in the message separating section 3 and message merging section 4 exceeds an allowable value. If the frequency exceeds the allowable value, the electronic ~~documents~~ messages are not send until the frequency becomes is less than or equal to the allowable value. The electronic ~~documents~~ messages are sent to the message transmitting section 6 when the frequency is less than or equal to the allowable value.

Page 7, paragraph 1,

The message transmitting section 6 outputs the electronic ~~documents~~ messages which are divided or merged such as described above in the electronic ~~document~~ message format acceptable to the transmission destination.

Page 7, paragraph 2,

It is mentioned above that the message control section 2 performs the conversion of the format of the electronic ~~document~~ message. However, such conversion may be performed by the message transmitting section 6.

Page 7, paragraph 4,

Operation of the electronic switching device 1 will be described in more detail now. In the electronic ~~document~~ message exchanging device 1, the message control section 2 judges whether to relay the received ~~document~~ message. If the electronic ~~document~~ message M is to be relayed it is sent to the message separating section 3 for each transmission destination. The message separating section 3 divides ~~documents~~ messages those exceed a predetermined length and sends the divided ~~document~~ message to the message merging section 4. The message merging section 4 merges the electronic ~~document~~ message in accordance with the procedure which is shown in Fig. 2.

Page 8, paragraph 1,

As shown in Fig. 2, when the electronic ~~document~~ message is input (step ST21), the message merging section 4 decides the frequency of generation of the ~~documents~~ messages (step ST22). The message merging section 4 judges whether the frequency exceed an allowable value (step ST23). If the frequency is equal to or less than the allowable value, the electronic ~~documents~~ messages are temporarily stored (step ST24). If there already exists a ~~document~~ message in this memory then the new ~~document~~ message is merged with the old (already existing ~~document~~ message). Thus, the memory stores a queue of ~~documents~~ messages as a single electronic ~~document~~ message. On the other hand, if the frequency is less than the allowable value, the electronic ~~document~~ message is sent (step ST25).

Page 8, paragraph 2,

The electronic ~~document~~ message stored in the memory as mentioned in step ST24 are sent in accordance with the procedure shown in Fig. 3. Namely, the queue in which the electronic ~~document~~ message is stored is checked (step ST31). If an electronic ~~document~~ message is stored in the queue, even if the electronic ~~document~~ message has been changed because of merging, the (merged) electronic ~~document~~ message in the queue is sent (step ST32) if the predetermined constant time has elapsed since the initial electronic ~~document~~ message was stored.

Page 8, paragraph 3,

As described above, the electronic ~~document~~ message which is merged in the message merging section 4 is sent to the message cutoff section 5. The message cutoff section 5 stops the flow of the electronic ~~document~~ message in accordance with the procedure of Fig. 4.

Page 9, paragraph 1,

As shown in Fig. 4, when the electronic ~~document~~ message is input (step ST41), the message cutoff section 5 decides the frequency of generation of the ~~documents~~ messages (step ST42). The message cutoff section 5 judges whether the frequency exceed an allowable value (step ST43). If the frequency exceed the allowable value, the electronic ~~document~~ message is not send for a predetermined time (step ST44). Finally, the ~~document~~ message is sent (step ST45). If the frequency is equal to or less than the allowable value, the electronic ~~document~~ message is sent immediately (step ST45).

Page 9, paragraph 2,

The electronic ~~document~~ message exchanging device 1 acquires electronic ~~documents~~ messages which are output from, for example, network servers, routers etc., as well as observation devices, control devices, and various equipment used for communications and other applications. The electronic ~~document~~ message exchanging device may be used to analyzes the message, and inform the result to a managing computer or the like through an electronic mail. Similarly, the electronic ~~document~~ message exchanging device may be used to monitor generation of breakdowns or abnormalities in a device and report the generated breakdowns or abnormalities to a managing computer or the like through an electronic mail.

Page 10, paragraph 1,

Furthermore, the electronic ~~document~~ message exchanging device may be used to send electronic ~~documents~~ messages for executing the commands which are needed for an object device in accordance with requirements from devices which are at remote places. In this case, the electronic ~~document~~ message exchanging device can grasp or detect the situation of the object device in accordance with jobs which are sent from a managing computer.